Chlorophyll *a* Preparation

Survey ID	Visit ID	Station ID	Preparation Batch ID

Sample IDs	Depth Code	Check Mark	Remarks

Sample volume (mLs)	Preparation Date (mm/dd/yyyy)	Preparation Finish Time (Shiptime, military)	Personnel (initials) XXX
		:	

Survey ID	Visit ID	Station ID	Preparation Batch ID

Sample IDs	Depth Code	Check Mark	Remarks

Sample volume (mls)	Preparation Date (mm/dd/yyyy)	Preparation Finish Time (Shiptime, military)	Personnel (initials)XXX
		:	

Notes:
1. Refer to LG200 for depth code abbreviations and definitions.
2. Refer to Attachment A of the WQS QAPP, LG400, or LG401 for more information on integrated samples.

PHYTOPLANKTON PRESERVATION

Survey ID	Visit ID	Station ID	Preparation Batch ID

Sample IDs	Depth Code	Check Mark	Remarks

Sample volume (mLs)	Preparation Date (mm/dd/yyyy)	Preparation Finish Time (Shiptime, military)	Personnel (initials) XXX
		:	

Survey ID	Visit ID	Station ID	Preparation Batch ID

Sample IDs	Depth code	Check mark	Remarks

Sample volume (mLs)	Preparation Date (mm/dd/yyyy)	Preparation Finish Time (Shiptime, military)	Personnel (initials) XXX
		:	

Survey ID	Visit ID	Station ID	Preparation Batch ID

Sample IDs	Depth code	Check mark	Remarks

Sample volume (mls)	Preparation Date (mm/dd/yyyy)	Preparation Finish Time (Shiptime, military)	Personnel (initials) XXX
		:	

Notes:
1. Refer to LG200 for depth code abbreviations and definitions.
2. Refer to Attachment A of the WQS QAPP, LG400, or LG401 for more information on integrated samples.

Entered into electronic file _____
(initials)

Nutrients Preparation

Survey ID	Visit ID	Station ID	Preparation Batch ID	Preparation Date (mm/dd/yyyy)	Preparation Finish Time (Shiptime, military)	Personnel (initials) XXX

Sample IDs	Depth Code	Check Mark	Remarks

Survey ID	Visit ID	Station ID	Preparation Batch ID	Preparation Date (mm/dd/yyyy)	Preparation Finish Time (Shiptime, military)	Personnel (initials) XXX

Sample IDs	Depth Code	Check Mark	Remarks

NOTE: Refer to LG200 for depth code abbreviations and definitions.

POC, PN, PP Preparation

Survey ID	Visit ID	Station ID	Batch ID	Date (mm/dd/yyyy)	Time (Shiptime,military)	Personnel (Initials)

Sample ID	Depth Code	Volume (mL) POC	PN	PP	Remarks

Survey ID	Visit ID	Station ID	BatchID	Date (mm/dd/yyyy)	Time (Shiptime,military)	Personnel (Initials)

Sample ID	Depth Code	Volume (mL) POC	PN	PP	Remarks

Survey ID	Visit ID	Station ID	BatchID	Date (mm/dd/yyyy)	Time (Shiptime,military)	Personnel (Initials)

Sample ID	Depth Code	Volume (mL) POC	PN	PP	Remarks

NOTE: Refer to LG200 for depth code abbreviations and definitions.

TSS Preparation

Survey ID	**Visit ID**	**Station ID**	**Filtration Batch ID**	**Filtration Date** (mm/dd/yyyy)	**Filtration Time** (Shiptime, military)	**Personnel** (initials)XXX

Sample ID	**Preparation Batch ID**	**Filter Number**	**Volume Sample Filtered** (L)	**Remarks**

Survey ID	**Visit ID**	**Station ID**	**Filtration Batch ID**	**Filtration Date** (mm/dd/yyyy)	**Filtration Time** (Shiptime, military)	**Personnel** (initials) XXX

Sample ID	**Preparation Batch ID**	**Filter Number**	**Volume Sample Filtered** (L)	**Remarks**

Survey ID	**Visit ID**	**Station ID**	**Filtration Batch ID**	**Filtration Date** (mm/dd/yyyy)	**Filtration Time** (Shiptime, military)	**Personnel** (initials) XXX

Sample ID	**Preparation Batch ID**	**Filter Number**	**Volume Sample Filtered** (L)	**Remarks**

Preparation of Quality Assurance Samples

Survey ID	Visit ID	Station ID

Method SOP	Sample ID	QCID Code	Prep. Date (mm/dd/yyyy)	Prep. Time (Shiptime, military)	Analyst (initials) XXX	Analyte Code	Target Value	Target Units	Remarks/Source Material

1. Each control standard sampleID represents material in a bottle. When the material in a bottle is replenished, a new sampleID results.
2. pH control standard sampleIDs remain constant for one lake, unless small bottle refilled from one liter bottle before lake is finished.
3. Turbidity control standard sampleIDs remain constant for the duration of the commercial bottle.
4. Alkalinity control standard sampleIDs change when the one liter bottle is refilled.
5. Conductivity control standard sampleIDs change when the one liter bottle is refilled.

Calibration Data of Board Chemistry Instruments

Survey ID

LAKE (Circle Selection)

SUPERIOR	MICHIGAN	HURON	ERIE	ONTARIO
(SU)	(MI)	(HU)	(ER)	(ON)

Calibration of On Board analytical instruments should be performed at least once at the beginning of each Lake Survey

pH Meter	Buffer 4	Buffer 7	Buffer 10
	(SU)	**(SU)**	**(SU)**
pH	***N/A***	*	*
pH - Alkalinity	*	*	***N/A***

***Record Temperature at which standardization was performed**

Turbidity Meter	Before Adjusting	After Adjusting
0 NTU		
20 NTU		

Conductivity Stds.	Readings	Turbidity Stds.	NTU VALUE
106.1 umho/cm		Calibration 0	
210.3 umho/cm		Calibration 0.4	
313.5 umho/cm		Calibration 2.0	
415.8 umho/cm		Calibration 8.0	
		Calibration 20.0	

Date of Calibration (mm/dd/yyyy)	**Time of Calibration** (Shiptime, military)	**Analyst** (Initials, XXX)

Notes:

1. Formazin Turbidity Standards should be prepared fresh daily.

2. This form is used for the sole purpose of documenting instrument calibrations only.

3. Calibration values of pH,Alkalinity &Turbidity meters should be updated w/ Stds. pH 7(pH), pH 4 (Alkalinity) & 20 NTU(Turbidity) at the beginning of each shift.

Calibration Data of Board Chemistry Instruments
Shiftwise Standardization

StationID	Date/Time (Shiptime)	Analyst	pH determination buffer 7	Temp. of Standardization	Alk determination buffer 4	Temp. of Standardization	Turbidity 20 NTU	Turbidity Empty Compartment
	(mm/dd/yyyy hh:mm)	(initials, XXX)	(reading before standardization)	(°C)	(reading before standardization)	(°C)	(before adjusting to 20)	before/after

Method (SOP Code): LG 500
03/01/02

Control Standards Data of Board Chemistry Parameters

Survey ID	Visit ID	Station ID

LAKE (Circle Selection)

SUPERIOR	MICHIGAN	HURON	ERIE	ONTARIO
(SU)	(MI)	(HU)	(ER)	(ON)

Warning Limits for Board Chemistry

SAMPLE ID	Parameter	Control Standard	Measured Value	Remarks	Control Standard	Warning Limits	*Control Limits
	pH - (Low)	6.86 (SU)			Low - pH 6.86	6.66 - 7.6	6.56 - 7.16
	pH - (High)	9.18 (SU)			High - pH 9.18	8.98 - 9.38	8.88 - 9.48
	Conductivity (Low)	196.5(umhos/cm)			Low Conductivity 196.5	194.5 - 198.5	193.5 - 199.5
	Conductivity (High)	293.3 (umhos/cm)			High Conductivity 293.3	291.3 - 295.3	290.3 - 296.3
	Alkalinity (Low)	40 (mg/L)			Low Alkalinity 40	38.6 - 41.4	38 - 42
	Alkalinity (High)	100 (mg/L)			High Alkalinity 100	98 - 102	97 - 103
	Turbidity (Low)	0.5 (NTU)			Low Turbidity 0.5	0.3 - 0.7	0.2 - 0.8
	Turbidity (High)	10 (NTU)			High Turbidity 10	8.6 - 11.4	8.0 - 12

Date of Control Check (mm/dd/yyyy)	Time of Control Check (Shiptime, military)	Analyst (initials)

Note: Control Standards should be analyzed at the onset, starting with the initial calibration of instruments for each lake survey and before the end of each 12-hour shift.

**Applicable instruments should be re-calibrated and samples re-analyzed, if any control standards measured are not within range of the Control Limits.*

Method (SOP Code): LG 500
03/01/02

Entered into electronic file____
(initials)

Board Chemistry Data

Survey ID	**Visit ID**	**Station ID**	**Analytical Batch ID**	**Analytical Date** (mm/dd/yyyy)	**Analytical Time** (Shiptime)	**Analyst** (Initials) XXX

Sample ID	**Depth Code**	**pH** (SU)	**Specific Conductance** (umhos/cm)	***Total Alkalinity** (mg/L)	**Turbidity** (NTU)	**Remarks**

**Total Alkalinity Calculation:*

Volume of Titrant used (ml) X 10

NOTE: Refer to LG200 for depth code abbreviations and definitions.

Entered into electronic file____
(initials)

Dissolved Oxygen Data (Winkler)

Survey ID	Visit ID	Station ID	Analytical Batch ID	Analytical Date (mm/dd/yyyy)	Analytical Time (Shiptime, military)	Analyst (initials, XXX)

Sample ID	Titrant Used D.O. (mL)	BOD Bottle Volume (mL)	Volume Corrected D.O. (mg/L)	Temperature (Celsius)	Barometric Pressure (mb)	Corrected Table Value (mg/L)	Remarks

Calculation of Volume Corrected D.O.
Titrant Used (mL) x 60.8 (mL) / BOD Bottle Volume (mL)

Corrected Table Value
Value from Temperature table x barometric pressure/std pressure

At least one saturated sample is analyzed on each shift

Method Performance Criteria		
QC Type	**Minimum Frequency**	**Acceptance Criteria**
Lab Duplicate	Each Master Station	Absolute Difference < 0.2 mg/L
	DO Surveys: All SRF and B-1 samples	
Lab Accuracy Check, Saturated Sample	At the beginning of each lake of a regular survey	+/- 0.5 mg/L, compared to theoretical
	DO Surveys: At the beginning and once per shift	